

# How Better Animal Health Supports Sustainable Food Systems

Over 1.3 billion people rely upon livestock for their lives and livelihoods. This contributes 40% of agricultural GDP in many countries, while supplying protein and important micronutrients to diets. However, our ability to sustainably raise livestock is being tested by rising populations and climate change.

Maintaining the value of livestock, while protecting our environment and safeguarding rural livelihoods, is an essential task and better protection of livestock health must be part of any sustainability strategy.



## Economic Sustainability

Protecting the health of livestock herds and flocks ensures the over 1 billion livestock farmers worldwide can continue to earn a living, while providing a pathway out of poverty for millions of smallholders across the globe.



## Environmental Sustainability

When livestock are protected against disease, their carbon emissions are lower, while less land and natural resources are required. A recent United Nations report stated, “there is growing evidence that addressing specific diseases and health conditions in livestock can play a crucial role in reducing GHG emissions.”<sup>1</sup>



## Social Sustainability

Hunger and malnutrition affects hundreds of millions of people across the globe. Healthier livestock means more milk, meat and eggs entering the food supply that can provide more people with a nutritious diet.

Healthy livestock support sustainability societies, helping foster an economically strong farming sector, a well-protected environment and a population free from hunger. This will help our world deliver in areas like the Sustainable Development Goals (SDGs) and the Nationally Determined Contributions (NDCs) each country has in the Paris Climate Agreement.

Increasing adoption of animal health tools like vaccination, biosecurity, diagnostics, digital technologies and more will be crucial in delivering better health for animals. Furthermore, increasing global veterinary capacity will help ensure the necessary knowledge is available for implementation. While the sustainability challenge ahead is large, animal health offers a proven pathway for delivering positive outcomes.

# Economic sustainability

*Animal diseases are a preventable threat to livelihoods and growth.  
Keeping animals healthy protects economic sustainability.*

## Billions rely on the livestock sector for their livelihoods



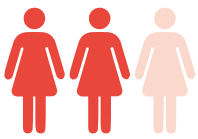
If the livestock sector was a country, it would be the **16th largest** in the world<sup>3</sup>



Livestock sector supports the income and livelihoods of 1 in 5 people, mostly in developing countries<sup>4</sup>



Women make up 43 percent of the global agricultural labour force<sup>5</sup>



Rural women represent 2/3rds of the world's poor livestock keepers<sup>6</sup>



In 2022, agriculture employed 27% of world's workers<sup>7</sup>

## The livestock sector accounts for<sup>8</sup>



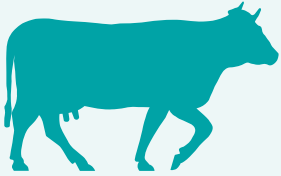
**40%**  
of agriculture output in developed markets



**20%**  
of agriculture output in developing markets

## Animal disease hurts livelihoods and economies

Animal diseases have both direct and indirect economic effects. Direct costs include immediate impacts on livestock populations and agriculture, while indirect costs include reductions in trade and other revenues.



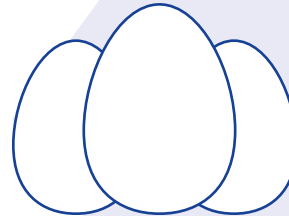
**20%**  
of global livestock  
production is lost to  
animal disease...



...costing producers  
**US\$300 billion**  
every year<sup>9</sup>



In just one year, disease in egg  
production cost producers  
**\$5.6 billion in losses**



Equivalent to almost  
**4 times**  
the UK's **£1.2 billion**  
egg market<sup>10</sup>

### Spotlight: Costs of Animal Disease

Global  
Foot and Mouth  
**\$21 billion**  
per year<sup>11</sup>



Brazil  
Cattle parasites  
**\$13.96 billion**  
per year<sup>12</sup>



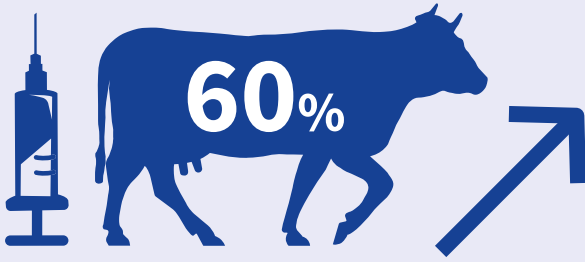
USA  
Porcine Reproductive and  
Respiratory Syndrome  
Virus (PRRS)  
**\$664 million**  
per year<sup>13</sup>



India  
Brucellosis  
**\$3.4 billion**  
per year<sup>14</sup>



## Preventing disease increases productivity and farmer incomes



Globally, when 60% of the world's beef cattle are vaccinated in a given year, this is associated with a 52.6% increase in beef production.<sup>15</sup>



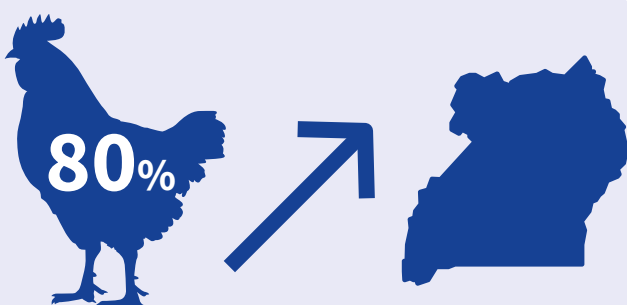
World Organisation  
for Animal Health

The World Organisation for Animal Health estimates that **20% of global livestock production** is lost to disease each year.<sup>16</sup>

For each one percentage point reduction in those losses, producer revenue would rise:<sup>17</sup>

Dairy cattle	\$3.8 B
Beef cattle	\$3.2 B
Poultry	\$3.1 B
Pigs	\$2.9 B

Vaccinating pigs against classical swine fever (CSF) allows them to reach slaughter weight 8–9 days earlier than those suffering from the disease. This means lower production costs for the producer.<sup>18</sup>



Vaccinating against Newcastle disease in backyard poultry systems on smallholder farms in Uganda resulted in an 80% increase in egg production in a recent study.<sup>19</sup>

# Environmental sustainability

*Animal health is directly connected with environmental health. Livestock suffering from disease are less productive and require more resources, all of which have negative impacts on the environment.*

## Sick animals have a larger environmental footprint

More resources are required to maintain livestock productivity when diseases are prevalent. Every kilo of milk, meat or eggs lost to illness means additional resources must be invested elsewhere to meet consumer demands.



When  
**20% of poultry**  
globally are affected  
by disease...



**8.6%**

more livestock land is needed to  
maintain production levels



When  
**50% of poultry**  
globally are affected  
by disease...

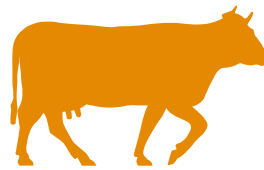


**21.6%**

more livestock land is needed to  
maintain production levels<sup>20</sup>

**GHG**

Researchers have found  
that cattle disease can increase  
GHG emissions by up to...



**113%**

per beef carcass



**24%**

per unit of milk<sup>21</sup>

“ Animal diseases not only mean reduced productivity,  
but also increased emission intensity. ”

*Recent findings from the German Federal Research  
Institute for Animal Health<sup>22</sup>*

## Better livestock health means lower emissions and less land use

Disease prevention is one of the most effective ways to improve the sustainability of livestock production. Healthier animals produce more meat, milk and eggs, allowing farmers to meet demand with fewer animals and limiting the need for expansion onto untouched lands.

Recent report found that reducing global livestock disease levels by

**10** percentage points

Would lead to a drop of more than

**800** ↓  
million tons  
of GHG emissions

Equivalent to the average annual emissions of

**117 million**  
Europeans

based on EU estimates of 6.8 tonnes of CO<sub>2</sub> per person<sup>23</sup>



### Country Spotlight: Effects of Disease Control on Emissions<sup>24</sup>

#### Argentina

Controlling for trichomoniasis led to a



**19-60%**  
decrease in emissions

#### Tanzania

Vaccinating against East Coast Fever led to a



**29-59%**  
decrease in emissions

#### Bangladesh

Deworming cattle led to a



**17-18%**  
decrease in emissions

#### Sri Lanka

Controlling for mastitis led to a



**10-29%**  
decrease in emissions

### Vaccination reduces land use<sup>25</sup>



Globally, a  
**40% vaccination**  
rate for cattle...



...is associated with a  
**5.2% reduction**  
in land use for livestock



In Brazil, a  
**40% vaccination**  
rate for cattle...



is associated with an even greater  
**12.8% reduction**  
in national land use for livestock

## Vaccination reduces livestock emissions

Vaccination is one of the primary methods for preventing disease and reducing emissions in livestock production. A recent study found controlling disease in livestock systems could reduce GHG emissions by as much as:<sup>26</sup>



when controlling FMD  
in beef cattle



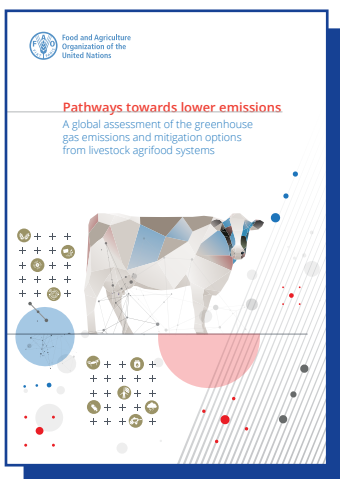
when controlling  
PRRS in swine



when controlling  
bronchitis in poultry

## United Nations Recommends Animal Health as a Climate Solution

Recent reports from the United Nations Food and Agriculture Organisation (FAO) have evaluated how livestock production can help bridge global nutrition gaps, while simultaneously reducing emissions. The two most impactful solutions were increasing productivity and better animal health.



Increased productivity and improved animal health **can reduce global livestock emissions by 30%**, according to a recent UN report.<sup>27</sup>

FAO's Roadmap for sustainable agrifood systems found '**prioritizing animal health is essential**'<sup>28</sup>



# Social sustainability

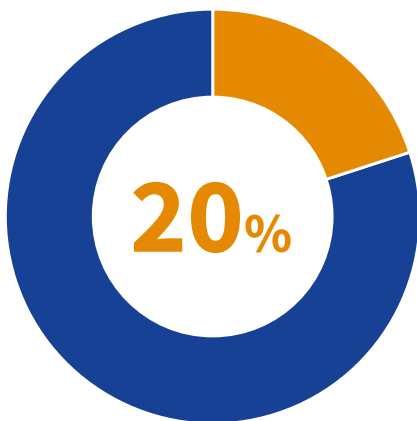
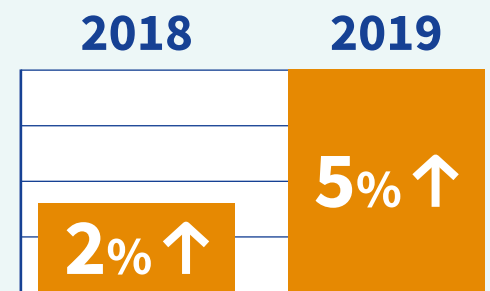
*Healthier livestock means higher productivity and a sustainable, reliable food supply for people across the world.*

## Animal disease leads to higher human hunger levels

The prevalence of animal diseases in livestock contributes to higher hunger levels as infections reduce the productivity of meat, milk and eggs, on which many communities depend on for their livelihoods and for food.

Poultry disease was associated with a **2.0%** increase in global hunger in 2018 and **5.0%** in 2019.

This is equivalent to global hunger increasing by **13.6 million people** in 2018 and **34.39 million** in 2019.<sup>29</sup>



20% of livestock production is lost to disease each year. These losses are equivalent to:<sup>30</sup>



The annual meat consumption of

**1.6 billion people**



The annual dairy consumption of

**2 billion people**



An outbreak of avian influenza in Mexico in 2012 led to a shortage of eggs that drove up prices by **82%** with inflated prices lasting for three years.<sup>31</sup>



## Healthy livestock can strengthen food and nutrition security

Healthy livestock can help support a sustainable food supply, provide for affordable nutrition, and help millions of malnourished people realize their full potential.

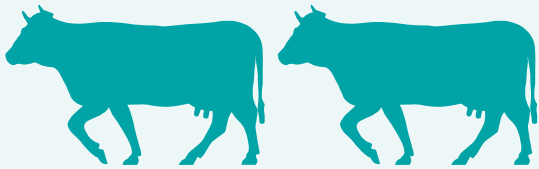
**Two billion** worldwide suffer deficiencies in the micronutrients readily available in meat, milk and eggs, and **148 million** children are stunted from malnutrition.<sup>32,33</sup>

# 148 million

children are stunted from malnutrition



**Every 2 cattle vaccinated**



**is associated with**



**1 person**  
avoiding hunger<sup>34</sup>

## Conclusion

*Healthy animals → healthy people → more sustainable world*

The data is clear. Better animal health means higher productivity, lower emissions and fewer people going hungry. Healthy animals are a cornerstone of sustainable food systems



Vaccination & veterinary care



Healthy animal



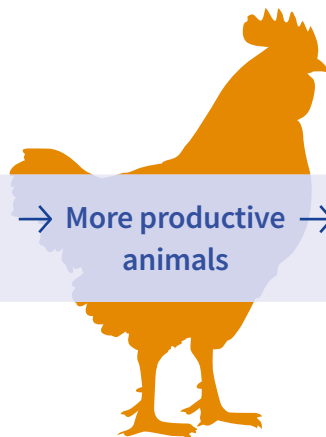
More productive animals



More income for farmers



Sustainable food systems



# Endnotes

- 1 <https://www.fao.org/3/cc9029en/cc9029en.pdf>
- 2 FAOSTAT
- 3 [https://databankfiles.worldbank.org/public/ddpext\\_download/GDP.pdf](https://databankfiles.worldbank.org/public/ddpext_download/GDP.pdf)
- 4 <https://gbads.woah.org/>
- 5 <https://www.fao.org/reduce-rural-poverty/our-work/women-in-agriculture/en/>
- 6 <https://www.fao.org/gender/learning-center/thematic-areas/gender-and-livestock/1/>
- 7 <https://www.fao.org/3/cc2211en/cc2211en.pdf>
- 8 <https://www.fao.org/animal-production/en>
- 9 [https://www.wto.org/english/news\\_e/news20\\_e/sps\\_05nov20\\_e.htm](https://www.wto.org/english/news_e/news20_e/sps_05nov20_e.htm)
- 10 <https://www.healthforanimals.org/reports/animal-health-and-sustainability/>
- 11 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3989032/>
- 12 <https://pubmed.ncbi.nlm.nih.gov/25054492/>
- 13 <https://dr.lib.iastate.edu/entities/publication/9f9fcb5-3ab4-4ddc-8ca5-f6331fc150d1>
- 14 <https://www.sciencedirect.com/science/article/abs/pii/S0167587715001087?via%3Dihub>
- 15 <https://www.healthforanimals.org/reports/animal-health-and-sustainability/>
- 16 <https://www.woah.org/en/what-we-do/global-initiatives/one-health/>
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- 20 <https://www.healthforanimals.org/reports/animal-health-and-sustainability>
- 21 <https://academic.oup.com/af/article/9/1/69/5173494>
- 22 <https://www.mdpi.com/2624-862X/1/1/3>
- 23 <https://www.healthforanimals.org/reports/animal-health-and-sustainability/>
- 24 <https://www.fao.org/3/cc0431en/cc0431en.pdf>
- 25 <https://www.healthforanimals.org/resources/publications/publications/animal-health-and-sustainability-a-global-data-analysis-summary/>
- 26 <https://onehealthoutlook.biomedcentral.com/articles/10.1186/s42522-023-00089-y>
- 27 FAO, Pathways to lower emissions, Table 3, <https://www.fao.org/3/cc9029en/cc9029en.pdf>
- 28 <https://www.fao.org/interactive/sdg2-roadmap/assets/3d-models/inbrief-roadmap.pdf>
- 29 <https://www.healthforanimals.org/reports/animal-health-and-sustainability>
- 30 <https://www.healthforanimals.org/reports/animal-health-and-sustainability>
- 31 <https://onlinelibrary.wiley.com/doi/full/10.1111/1467-8489.12387>
- 32 <http://www.fao.org/3/i8384en/i8384EN.pdf>
- 33 <https://www.fao.org/3/cc3017en/online/state-food-security-and-nutrition-2023/executive-summary.html>
- 34 <https://www.healthforanimals.org/reports/animal-health-and-sustainability>

## More information

This document was produced by HealthforAnimals, the Global Animal Health Association. For more data on sustainability and other topics, visit our website, [HealthforAnimals.org](https://HealthforAnimals.org).